

What is claimed is:

1. A system for determining the location of a mobile unit in communication with a wireless radio communication network that includes at least one communications tower, the system comprising:

at least one stationary location receiver operatively connected to the at least one communication tower for receiving a radio frequency signal from the mobile unit and configured to determine a first location calculation of the mobile unit location; and

a mobile location receiver positioned some distance from the mobile unit in accordance with the first location calculation, the mobile location receiver configured for receiving the radio frequency signal from the mobile unit, determining a second location calculation of the mobile unit, and being moved toward the mobile unit location;

wherein as the distance decreases between the mobile location receiver and the mobile unit, the second location calculation becomes increasingly more accurate relative to an actual location of the mobile unit.

2. The system of claim 1, wherein the stationary location receiver is mounted in an emergency response vehicle.

3. The system of claim 2, wherein the stationary location receiver decodes the radio frequency signal to determine a sequence of digits dialed by the mobile unit and determines the first location calculation if the sequence of digits matches a predetermined sequence of digits.

4. The system of claim 3, wherein the predetermined sequence of digits is 9-1-1.
5. The system of claim 1, wherein the stationary location receiver is configured to calculate a circular error probability.
6. The system of claim 1, wherein the wireless communication network further includes a Public Safety Answering Point (PSAP), and wherein the system further comprises:
 - a geographic information server configured to generate, from the first location calculation and the second location calculation, a situation awareness map for transmission to the PSAP.
7. The system of claim 6, wherein the geographic information server includes:
 - a first interface for receiving the first location calculation;
 - a second interface for receiving the second location calculation;
 - a first database comprising geographic data; and
 - a geographic location engine for computing a map space location of the mobile unit from the first location calculation or second location calculation or combination thereof, and generating the situation awareness map comprising the map space location layered with the geographic data.
8. The system of claim 7, wherein the first interface also receives an identification number of the at least one communication tower;

wherein the geographic information server further include a second database comprising unique identification numbers of a plurality of communication towers and corresponding geographic locations;

wherein the first location calculation comprises a range and bearing measurement that is relative to the geographic location of the at least one communications tower; and,

wherein the geographic information server generates the map space location of the mobile unit by searching the database for the identification number of the at least one communication tower, and upon finding a matching identification number, calculating the map space location from the corresponding geographic location and the first location calculation.

9. The system of claim 8, wherein the map space location and geographic location are latitude/longitude positions.

10. The system of claim 1, further comprising:

a Public Service Answering Point (PSAP);

a geographic information server for receiving a first relative location measurement of the mobile unit from the at least one communication tower, calculating a map space location therefrom, and transmitting the map space location to the PSAP, the server being configured for access to a plurality of databases to allow the server to provide both emergency and commercial location services;

a first data link for communication of the map space location between the PSAP and the mobile location receiver so that the mobile location receiver may be positioned in accordance

with the map space location for receiving the signal from the mobile unit and calculate a second relative location measurement therefrom.

11. A mobile location device for locating cellular telephones, the mobile location device capable of being moved toward a cellular telephone targeted for locating, the mobile location device comprising:

means for transmitting to a communications tower location information for the mobile location device as the mobile location device moves toward the targeted cellular telephone;

means for receiving from the communications tower location information for the targeted cellular telephone as the mobile location device moves towards the targeted cellular telephone;

means for displaying location information for the targeted cellular telephone on the mobile location device as the mobile location device moves closer to the targeted cellular telephone.

12. The mobile location device of claim 11 further comprising means for issuing to the cellular telephone a demand for the cellular telephone to chirp-on-demand.

13. The mobile location device of claim 11 further comprising a directional antenna having a rotatable boom controlled by a servo mounted on top of an emergency vehicle.

14. The mobile location device of claim 11 wherein the mobile location device is configured as a hand-held device.

15. The mobile location device of claim 11 further comprising a plurality of antenna inputs, each antenna input having a different channel.
16. The mobile location device of claim 11 further comprising means for receiving identification information for the targeted cellular telephone from the communications tower.
17. The mobile location device of claim 11, wherein the means for displaying location information for the targeted cellular telephone comprises a display showing range and bearing overlaid on a moving map.